

away, according as they are inserted in the fore or hinder part. On the raft theory the outrigger canoe is supposed to have been developed from an improved modification of the sailing raft, in which two logs were made use of instead of many, as opposing less resistance to the water, and were connected by a platform. Such two-log structures, of course without sails, have been described as in use by the Tasmanians. The use of the sailing rafts on the Pacific coast of America seems to lend probability to the theory, since the outrigger canoe is universal in Polynesia. On this theory the double canoe (Fig. 2, 5) is a highly-specialised development of the two-log rafts; and General Pitt Rivers points for additional proof to the fact that in all double canoes one vessel is always smaller than the other. This may however be merely a contrivance for aiding steering.

On the other hand it seems to us very probable that the outrigger canoe is really derived from the double canoes and that the outrigger float represents, not a log in process of development towards a canoe itself, but a degenerate second canoe. On some parts of the coast of New Guinea the Papuans are accustomed to lash side by side firmly several of their large canoes, when about to set out on a trading expedition of 200 or 300 miles and sail along the coast. Such a group of canoes is called a "lakatoi." It is very probable that the fastening of two dug-outs side by side may have early suggested itself, and that the two may have gradually been separated and fastened by longer and longer cross-pieces, as stability was found to be increased thereby. We merely suggest this other view of the matter as worthy of consideration. It is by means of collections such as that now under consideration that such points can be determined. Luckily, for some reason or other, possibly a religious one, savages all over the world make most carefully-constructed models of their canoes. These are not children's toys, but exact models, correct in all details. Even the wretched Fuegians do this, and the models are not made for purposes of barter originally, since they are made by such races as the Admiralty Islanders, who have no opportunity of disposing of them. We seem even ourselves to make more models than necessary, as the quantities of them in museums testify. General Pitt Rivers has collected a most valuable series of native models of boats and ships of all kinds.

(To be continued.)

### NOTES

JUDGING from the papers and reports that have reached us, through the kindness of the permanent secretary, Mr. F. W. Putnam, the Boston meeting of the American Association has been a great success. The many attractions of Boston drew together a large concourse, including nearly all the great lights of American science. The people of Boston and Cambridge seem to have exerted themselves to the utmost to make the numerous visitors enjoy themselves, and, from the accounts of the many excursions and receptions, these exertions were completely successful. There were something like a thousand names registered on the books of the Association, and at the Cambridge dinner, on August 24, 870 persons were present. The number of papers entered was 280, all of them evidently duly considered before being admitted, and many of them of great scientific importance.

THE address of welcome of Prof. Rogers, of the Massachusetts Institute of Technology, briefly reviewed the origin of the various National Associations, predicting that the American would in time rival that which at the moment was meeting at Swansea. "Let us," Prof. Rogers said, "make it our special work to exclude from our annual reports all detailed publications which are not of a character actually to add to the

stock of human knowledge, whether that knowledge be simply the gathering together of facts by careful processes of discernment, or the development of laws by careful mathematical investigation." Mr. Lewis H. Morgan, the president of the Association, in his brief reply to the addresses of welcome, made some remarks which are quite as deserving of attention here as on the other side of the water. "When the meetings of this Association become indifferent to the communities among which they are held, its usefulness will be near its end. There is a direct connection between the work upon which its members are engaged and the material prosperity of the country, in which all alike have an interest. Scientific investigations ascertain and establish principles which inventive genius then utilises for the common benefit. We cannot have a great nation without a great development of the industrial arts, and this, in its turn, depends upon the results of scientific discovery as necessary antecedents. Material development, therefore, is intimately related to progress in science." The address of Prof. A. Agassiz in Section A we gave in a recent number, and that of Prof. Asaph Hall we hope to be able to give next week. Prof. Bell's remarkable lecture will be found on another page.

THE German Association began its sittings at Danzig last Saturday, and continues them during the present week. Judging from the reports that have been sent us, the German *savants* have received a warm welcome in the great Prussian commercial city. The programme of papers, as we have already intimated, is long, and contains several of great importance. Prof. Cohn of Breslau brought forward at one of the public lectures important data, spreading over many years, as to the prevalence of colour-blindness, especially in Germany, Switzerland, and America.

A CORRESPONDENT informs us that at the meeting of the Geological Society of France at Boulogne, to which we have already referred, the French geologists did England the honour of electing Prof. Prestwich president. Besides Professors Prestwich and Seeley, two other English geologists were present at the meeting, the Rev. J. F. Blake and the Rev. T. Wiltshire. There were also present a large number of Belgian geologists. With the French geologists the meeting numbered about fifty members. Daily excursions were made to all the many places of geological interest in the Boulonnais, and in the evenings papers were read by Prof. Gosselet, Dr. E. Sauvage, M. Pellat, and Prof. Prestwich, on the geological features of the places visited. The geologists were most hospitably entertained by the municipality and other public bodies.

AT the Swansea meeting of the British Association Sir William Thomson, as an incidental illustration of a paper by him, gave the following method of "turning the world upside down." Suppose there to be no sea or other water on the earth, and no hills or hollows; and let the earth be a perfectly elastic or perfectly rigid solid, with no moon nor sun, nor other body to disturb it. Commencing anywhere in the northern hemisphere, walk a few miles northwards or southwards. This, by displacing the earth's axis makes a slope. Then walk up hill as long as you can; then walk a few miles southwards; then lie down and rest, and in time the thing is done; that is to say, what was the South Pole is found under Polaris.

THE autumn Congress of the Sanitary Institute was opened at Exeter on Tuesday, under the presidency of Lord Fortescue.

THE death, on August 2, is announced of Karl Ritter von Hauer, the director of the chemical laboratory of the Geological Institute of Vienna.

A CONGRESS on hygiene was held at Hamburg on September 13, 14, 15. The number of members was about 200. At the first sitting the hygiene of hospitals and public buildings was discussed; at the second the hygiene of shipping, after the

delivery of an address by Dr. Reincke; and on the third day the ventilation of private dwellings, and other similar subjects. A resolution, proposed by Dr. Rietschel of Dresden, was passed to induce public authorities to study practically the ventilation of buildings, and another, by Dr. Prath of Dresden, that sanitary inspection should always take place by duly qualified officers. This session is the eighth of the Association.

THE Russian newspapers announce that the jubilee of the zoological museum of the Academy of Sciences, established in 1831 by the Emperor Nicholas, will take place in 1881. Russian and foreign zoologists will meet at St. Petersburg on this occasion.

THE Association Scientifique de France has not continued the observations of meteors which was begun by Leverrier, its founder. No steps have been taken by the Observatory to fill up this important gap in the scientific work of the nation. The interest of observations taken during the last two years in the display of August meteors and the forthcoming inauguration of Leverrier's statue have attracted public attention to this circumstance, and it is hoped these observations will shortly be resumed.

UNIVERSITY COLLEGE, Bristol, has the credit of being the first in England in which the higher education of women has been conducted on a large scale in conjunction with that of men. Its Calendar, which is before us, shows that in the last session, its fourth, the College was attended by more than five hundred students, of whom nearly half were women. A wide range in science and literature is covered by the lectures, of which there are more than forty distinct courses in the day, and more than twenty in the evening. Its engineering department has derived great advantage from the plan under which the students spend the six winter months in the College, and the six summer months as pupils in engineering works in the neighbourhood. The want of space, which has hitherto pressed severely, will be relieved by the opening in October of a part of the new buildings.

THE crayfish is disappearing so rapidly in several French departments that energetic measures have been considered necessary for its protection. The fishing of it has been entirely prohibited in the departments of Meuse and Doubs by prefectorial decrees.

THE freedom of the City of London is to be conferred on Sir Henry Bessemer, F.R.S., on October 6.

M. LORTET gives a brief account in the *Comptes rendus* for September 13, of the results of his dredging in the Lake of Tiberias. The lake is 212 metres above the surface of the Mediterranean, and the greatest depth is 250 metres. M. Lortet finds proofs that the lake was formerly on the same level as the Mediterranean. It is probable, he thinks, that formerly the lake was very salt; and thus a study of the fauna of the lake is full of interest. At least a dozen species of fish were obtained, several of them new forms, which M. Lortet is now investigating. He gives the following list of species which have been determined:—*Clarias macranthus*, *Capoeta damascena*, *Barbus Beddomii*, *Chromis Andra*, *C. paterfamilias*, *C. Simonis*, *C. nilotica*, *C. nov. sp.*, *C. nov. sp.*, *C. nov. sp.*, (un genre nouveau indéterminé), *Labrobarbus canis*. Several new species of molluscs have also been obtained; M. Lortet gives the following list:—*Neritina Jordani*, Butt.; *Melania tuberculata*, Müller; *Melanopsis premorsa*, L.; *M. costata*, Olivier; *Cyrena fluminalis*, Müller; *Unio terminalis*, Bourg.; *U. tigridis*, Bourg.; *U. Lorteti*, Locard; *U. Pietri*, Locard.; *U. Maris Galilei*, Locard. *Melanopsis* and *Melania* are of a marine appearance, and seem to M. Lortet to show the transition between salt and fresh water.

IN Vol. xii. of the *Transactions* of the New Zealand Institute Mr. J. W. Stack has some interesting notes on the colour-sense of the Maori. Mr. Stack asks what stage had the colour-sense of the Maori reached before intercourse with Europeans began? This can readily be ascertained by reference to the terms existing in the language at that date for giving expression to the sense of colour. We find, upon examination, that the language possessed very few words that conveyed to the mind an idea of colour, apart from the object with which the particular colour was associated. There are only three colours for which terms exist, namely, white, black, and red. White, *ma* (sometimes *tea*—very limited application). Black, *pouri*, *pango*, *mangu*. Red, *whero*, *kura*, *nganzana*. If we analyse these words they seem all to relate to the presence or absence of sunlight. *Ma* is doubtless a contraction for *Marama*, light, which is derived from *Ra*, the sun. *Pouri*, black, is derived from *Po*, night. The derivation of *pango* and *mangu* is not so apparent, but I venture to think that both *whero* and *kura* may be traced to *Ra*. *Ma* is not only the term for whiteness and clearness, but also for all the lighter tints of yellow, grey, and green. Grey hair is called *hina*, but the term was never used to designate anything else but hair; every other grey object was either *ma* or *pango*, as it inclined to a lighter or darker shade. All the words for expressing redness, except *nganzana*, *may*, Mr. Stack thinks, be traced to *Ra*, and connect the Maori idea of that colour with the brilliant rays of the sun. *Nganzana* is not the word generally used to express the quality of redness, but only certain appearances of it, as in flowers or blood-shot eyes. Yellow and green were recognised, not as abstract conceptions of colour, but only as they are associated with objects. Blue was not formerly recognised, as no word exists to represent it. Anything blue was classed with black, and went under the heading of *pouri*, or *pango*, or *mangu*. The blue depths of ocean and sky were *pouri*, or dark. No words are found in the Maori language to express violet, brown, orange, and pink colours; but there are no less than three words to express pied or speckled objects. *Kopurepore* = reddish speckle; *Kotingotingo* = dark speckle; *tongitongi* = spotted. The limited number of colour-expressions that exist in the Maori language cannot be attributed to the absence of objects presenting those colours for which the terms are wanting. The ornamental scroll-work, and the elaborate patterns employed in tattooing and carving, showed that the Maoris were capable of appreciating the beautiful, both in form and in colouring, and we can only account, Mr. Stack thinks, for their indifference to the more delicate tints of flowers which call forth our admiration by supposing that their colour-sense was not so well educated as our own.

MR. JOHN SCOTT has been appointed Professor of Agriculture and Estate Management to the Royal Agricultural College at Cirencester. Mr. Scott studied agriculture at the University of Edinburgh, and has had many years practical experience in farming, estate management, and land valuing, both at home and in the Colonies. He is the author of two well-known books on farm and estate valuations, and was formerly editor of the *Farm Journal*.

A NEW and revised edition of Bishop Stanley's well-known and deservedly popular "Familiar History of British Birds" has just been published by Messrs. Longmans and Co. It has been revised by "a practical ornithologist of much experience," and has been furnished with numerous additional illustrations.

ANOTHER Lake village, assigned by experts to the age of Bronze, has been discovered at Auvernier, near Neuchâtel. Several millstones quite new, others half made, have been brought to light, from which it is inferred that the place may have been the seat of a manufactory of these articles. Another

conclusion drawn from this find is that Swiss pile buildings served as actual dwellings for the primeval inhabitants of the land, and were not, as has been supposed, used merely as storehouses.

MR. DAVID BOGUE will publish in November a new book by Mr. S. Butler, author of "Erewhon," "Life and Habit," &c., entitled "Unconscious Memory." The work will contain translations from the German of Prosper Ewald Hering of Prague, and of von Hartmann, with a comparison between the views of instinctive and unconscious actions taken by these two writers respectively.

THE British Museum is about to be enriched by a collection of natural history specimens made by the officers of Her Majesty's surveying ship *Alert*, which has been for some months engaged in making a complete survey of the Straits of Magellan.

WITH the view of promoting agricultural improvement in Bengal and encouraging the study of scientific agriculture, the Bengal Government has created two annual special scholarships of 200*l.* each, to be held by science graduates of the Calcutta University at Cirencester College.

A TERRIFIC hurricane passed over the Bermudas on August 29 and 30, stated to have exceeded in violence the historical hurricane of 1839.

Two years ago (NATURE, vol. xviii. pp. 104, 344) we directed attention to the discoveries made in Russia in regard to Fermat's asserted prime-form  $2^{2^n} + 1$ . We have now to chronicle the fact that to the number of composite integers of this form another addition has just been made. M. Landry has found that  $2^{64} + 1$  is divisible by 274177. As at present ascertained therefore the composite members of the form are—

$$\begin{array}{ll} m = 5; \text{divisor,} & 5 \cdot 2^7 + 1 \text{ (Euler),} \\ m = 6; & 1071 \cdot 2^8 + 1 \text{ (Landry),} \\ m = 12; & 7 \cdot 2^{14} + 1 \text{ (Pervouchine),} \\ m = 23; & 5 \cdot 2^{25} + 1 \text{ (Pervouchine).} \end{array}$$

MM. MARTINET AND LESSON have brought out vol. i. of their work on the origin and migrations of the Polynesians. The next volume is nearly ready, and the remainder will be published in 1881. The aim of this exhaustive work is to demonstrate that the Polynesians are neither Asiatics nor Americans, but Maoris, from the Middle Island.

M. C. DE UFALVY is engaged in editing the narrative of the voyage of M. Panagiotis Potagos in Central Asia; while to M. Henri Duveyrier has been confided, by the Paris Geographical Society, the task of preparing for publication in French that traveller's expedition in Equatorial Africa.

THREE French expeditions are being organised. One, by M. Revoil, to Aden, in the country of the Somalis; another, by M. Moindron, to the northern coasts of New Guinea, which, if practicable, is to advance beyond the points reached by Raffray, Meyer, and Albertis; and the third, by M. Flahant, to the Polar Seas, in conjunction, probably, with Nordenskjöld.

A FRENCH explorer, M. Lecart, who is at present on the banks of the Niger, writes home from "Koundian (Gangaran), July 25," that he has discovered a new vine, which promises to be of great economical value. He says the fruit of the vine is excellent and abundant, its cultivation very easy, its roots tuberose and perennial, while its branches are annual. It can be cultivated as easily as the dahlia. He himself had been eating the large grapes of the vine for eight days, and found them excellent, and he suggests that its culture ought to be attempted in all vine-growing countries as a possible remedy against the phylloxera. He is sending home seeds for experiment, both in France and Algeria, and will bring home specimens of the plant at all stages.

MR. F. J. CAMPBELL of the College for the Blind, Upper Norwood, he himself being blind, gives an interesting account of his successful ascent of Mont Blanc, the first time such a feat was accomplished by a blind man.

THE Report of the Cardiff Naturalists' Society for 1879 has to complain of a considerable falling off in the membership, attributable mainly to bad times. Otherwise the work of the Society has been fairly satisfactory.

AT a recent meeting of the Balloon Society of Great Britain, it was announced that a challenge had been received from M. de Fonvielle, president of the French Académie d'Aërostation, to a balloon contest during the present autumn on English soil. After a discussion it was decided to accept the challenge, the contest to take place between one member of each nationality, and the ascent to be made from the Crystal Palace.

ACCORDING to a table published by the *Statistische Monatschrift* of Vienna, the number of volumes in the National Library of Paris is 2,078,000, and in the British Museum only 1,000,000. But it should be noted that the number of volumes does not give an exact idea of the real importance of a library. The Vatican, which is stated to have only 30,000 volumes and 25,000 manuscripts, must be considered as ranking far above its numerical position. According to the provisions of the French law, the deposit is required of each re-impression, even where there is no alteration, and the National Library has not the right of disposing by sale of useless volumes, so that there is an accumulation of popular works of no value at all. There is a room full of Noël and Chapsal's Elements of Grammar, and endless numbers of *Petits Parisiens*. Popular novels are in the same case, and there are more than eighty copies of "Nana."

AN interesting prehistoric sketch of the Spreewald and the Schlossberg of Burg, with special map and illustrations, by Professors Virchow and Schulenburg, has been published by Wiegandt of Berlin.

THE additions to the Zoological Society's Gardens during the past week include a Brown-necked Parrot (*Psephenops fuscicollis*) from West Africa, presented by Mr. H. Wood; a Jacaraca (*Craspedocephalus brasiliensis*), a Tree Snake (*Dryophis acuminata*), a — Amphisbœna (*Amphisbœna alba*) from Brazil, presented by Dr. A. Stradling, C.M.Z.S.; a — Amphisbœna (*Bronia brasiliensis*) from Pernambuco, presented by Mr. W. A. Forbes, F.Z.S.; a Weeper Capuchin (*Cebus capucinus*) from Brazil, a Ring-tailed Coati (*Nasua rufa*), a Spotted Cavy (*Calogenys paca*) from South America, a Crab-eating Raccoon (*Procyon cancrivorus*) from West Indies, a Saturnine Mocking-Bird (*Mimus saturninus*), two Silky Hang-nests (*Amblyramphus holosericeus*), a Sulphury Tyrant Bird (*Pitangus sulphuratus*) from Monte Video, a Maximilian's Aracari (*Pteroglossus weddi*) from Pernambuco, deposited; five Ruffs (*Machetes pugnax*), British, purchased; a Reeves's Muntjac (*Cervulus reevesi*), born in the Gardens.

## OUR ASTRONOMICAL COLUMN

COLOURS OF SOUTHERN STARS.—In the *Uranometria Argentina*, Dr. Gould has drawn attention to a number of stars presenting marked colour, and to several in which there appears to be change of colour: the following are amongst the more noticeable cases:—

β Hydri is remarkable for its clear yellow light (2.7*m.*); the Cordoba observations do not support Sir John Herschel's suspicion of variability of brightness. α Indi is also of a bright clear yellow; mag. 3.1. The blue colour of γ Tucanæ is very marked; Gould's magnitude is 4.0. φ Eridani (3.5) is remarkable for its blue colour, and ν Puppis (3.5) is decidedly blue; ε Pavonis, the estimates of magnitude of which star vary from 3.6 to 4.2, is of a remarkably blue colour. Gould's No. 9 in Dorado, Lacaille